

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
 United States Patent and Trademark
 Office
 Box PCT
 Washington, D.C. 20231
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 27 June 2000 (27.06.00)	
International application No. PCT/US99/29508	Applicant's or agent's file reference 017932-PC
International filing date (day/month/year) 14 December 1999 (14.12.99)	Priority date (day/month/year) 15 December 1998 (15.12.98)
Applicant D'ESPOSITO, Louis	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

12 May 2000 (12.05.00)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Claudio Borton Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 017932-PC	FOR FURTHER ACTION		see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.
International application No. PCT/US 99/ 29508	International filing date (day/month/year) 14/12/1999	(Earliest) Priority Date (day/month/year) 15/12/1998	
Applicant UNION CARBIDE CHEMICALS & PLASTICS TECH...et al.			

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.
☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 36.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☐ as suggested by the applicant.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1
☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

P S 99/29508

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G01N21/25 G01N21/51

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 G01N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 555 627 A (MCRAE JR THOMAS G) 26 November 1985 (1985-11-26) cited in the application column 3, line 28 -column 4, line 23	1-3,6-8, 11,12
A	figures 1,2 -----	10,14
Y	US 4 498 780 A (BANNO TAIICHI ET AL) 12 February 1985 (1985-02-12) column 2, line 65 -column 3, line 59 figure 1 -----	1-3,6-8, 11,12
A	EP 0 640 826 A (BECTON DICKINSON CO) 1 March 1995 (1995-03-01) column 2, line 6 - line 33 column 7, line 53 -column 8, line 6 figure 3 -----	1,2,4,6, 7,11
	-/--	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

31 March 2000

Date of mailing of the international search report

06/04/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
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Authorized officer

Krametz, E

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 99/29508

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 448 923 A (AVL PHOTRONICS CORP) 2 October 1991 (1991-10-02) page 10, line 53 -page 11, line 24 figure 1 -----	1,4,6,7, 11
A	US 5 304 492 A (KLINKHAMMER GARY) 19 April 1994 (1994-04-19) column 4, line 5 -column 6, line 22 column 8, line 36 - line 51 figure 2 -----	1,5-7,9, 11

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 99/29508

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 4555627	A	26-11-1985	NONE		
US 4498780	A	12-02-1985	JP	1015012 B	15-03-1989
			JP	1532513 C	24-11-1989
			JP	57132038 A	16-08-1982
			DE	3204578 A	07-10-1982
EP 0640826	A	01-03-1995	US	5397709 A	14-03-1995
			AU	679078 B	19-06-1997
			AU	7020394 A	09-03-1995
			CA	2130014 A	28-02-1995
			JP	7163394 A	27-06-1995
			JP	8029116 B	27-03-1996
			US	5595708 A	21-01-1997
EP 0448923	A	02-10-1991	AT	132537 T	15-01-1996
			DE	69024631 D	15-02-1996
			DE	69024631 T	19-09-1996
			US	5372936 A	13-12-1994
US 5304492	A	19-04-1994	NONE		



INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference ACH/55278/000		FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/US99/29508	International filing date (day/month/year) 14/12/1999	Priority date (day/month/year) 15/12/1998	
International Patent Classification (IPC) or national classification and IPC G01N21/25			
Applicant UNION CARBIDE CHEMICALS & PLASTICS TECH...et al.			

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 7 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 12/05/2000	Date of completion of this report 23.03.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Loades, M Telephone No. +49 89 2399 2184 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/US99/29508

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments (Rules 70.16 and 70.17).):*

Description, pages:

1-19 as originally filed

Claims, No.:

1-12 as received on 14/02/2001 with letter of 13/02/2001

Drawings, sheets:

1/5-5/5 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/US99/29508

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

see separate sheet

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims 1-12
	No: Claims
Inventive step (IS)	Yes: Claims
	No: Claims 1-12
Industrial applicability (IA)	Yes: Claims 1-12
	No: Claims

2. Citations and explanations

see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US99/29508

Re Item I

Basis of the report

Original claim 1 specified that the detector was adapted to detect backscatter of radiation from one or more irradiated zones. This feature is no longer present, but has effectively been replaced by feature d. Thus the scope of the claim has been shifted in scope in such a manner that it would appear to represent an extension of subject matter. It may be, however, that original claim 1 and the other independent claims were incorrect, and that much of the description was misleading in referring to backscatter (see also Item VIII below). Thus the claims 1 and 6 have been examined as they stand.

Re Item V

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. The following documents are referred to in this report:

D1:US-A-4 555 627 (MCARAE J. THOMAS G) 26 November 1985(1985-11-26) cited in the application

D2:US-A-4 498 780 (BANNO TAIICHI ET AL) 12 February 1985 (1985-02-12)

D3:EP-A-0 640 826 (BECTON DICKINSON CO) 1 March 1995 (1995-03-01)

D4:EP-A-0 448 923 (AVL PHOTRONICS CORP) 2 October 1991 (1991-10-02)

D5:US-A-5 304 492 (KLINKHAMMER GARY) 19 April 1994 (1994-04-19)

2. Review of the cited prior art documents:

D1 relates to a BAGI sensor for monitoring an area for gas leaks. As indicated in the abstract, and at e.g. col. 4, lines 41-48, and col. 7, lines 16-18, the absorption by the substance of interest, is detected. The BAGI system relies on the presence of a reflective background, such that light directed onto the sample, passes through and is reflected from the background back through the sample to the detector, undergoing a double pass absorption; in this context see col. 3, lines 41-45, col. 4, lines 32-33, 39, col. 5, lines 10-12, 20-22.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US99/29508

D2 describes a photometer system in which a multi well sample block is investigated by passing light once through the wells, which are termed "reaction vessels"; each source is associated with a wavelength filter.

D3 also discloses a multi well plate. Here the photoelectric measuring means may be moved in XY fashion over the plate. A laser is used and fluorescent light investigated, to determine bacterial growth, bar codes for the zones being read by monitoring backscattered light. Light focussed on an inner surface of the well or vial, bearing a chemical sensor, but there is apparently no mention in D3 of dual passage through the sample, or absorption measurement.

D4 relates to a system for investigating biological activity in a specimen by measuring fluorescence of the sample in a bottle-like container.

D5 describes a photoelectric measuring apparatus, for fluorescence chemical analysis, provided with optical fibre bundles to couple light to and from the sample contained in a flow through tube. Col. 9, lines 8-10, refer to scattering measurements with monochromatic light as being a reflectometer. Absorption is referred to col. 8, line 39.

3. Novelty and inventive step:

Claim 1 (apparatus):

As far as can be understood, in the system of D1, the area to be monitored can be considered to be constituted by a number of zones (see e.g. fig. 1 (c) in which an array of containers define different zones). The detector 44 is able to detect absorption from one or more zones. The "detector" could be taken to include both the radiation detector and the processing circuit. Feature b of claim 1 is also clearly present in D1. The reflective background mentioned in D1 anticipates feature d of claim 1. Thus the main difference between claim 1 and D1 system is that the zones comprise reactors.

It is known in the art e.g. from D1, to perform backscatter tests for chemical compounds using light of a predetermined wavelength on very large samples, involving scanning a laser beam over an area. It is known from D3 to investigate a large number of small samples using a laser beam and a multi well cell. The skilled person would be well

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US99/29508

aware that the basic physical analytical principle of BAGI can be applied equally well to small samples as to large ones, and would apply it to the system of D3, by modifying the cells to provide reflection back through the sample and thereby arrive at the subject matter of claim 1 without inventive step. The idea of employing an absorption measurement sample vessel which has a reflector at one end or side for enabling a double pass through the sample, is conventional in the art, so designing the wells of the D3 apparatus in this way, would not need inventive ingenuity.

(It is noted in this respect, that in view of the shift in scope of the claims, it may be that the search is not complete in respect of feature (d)).

It would appear that an objection merely starting from D3 could be made. Claim 1 differs from the D3 structure only in that the cells or vials are not as defined in part (d) of claim 1. However sample cells of such type seems to involve a conventional principle in the art (passage through the sample, and reflection back through the sample), and would be employed when convenient.

Claim 6 (process):

This is of corresponding scope to apparatus claim 1.

For similar reasons it appears to be obvious.

Dependent claims:

The dependent claims seem to relate to mere design modifications, consequential features of the basic system of claims 1 and 6, or conventional features, and thus do not add anything inventive to these claims.

Re Item VII

Certain defects in the international application

1. The title on page 6 seems inappropriate, since the detailed description starts on page 14.
2. To comply with the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1, D2, D3, D4, D5 should have been mentioned in the description.
3. The words "herein incorporated by reference" on page 3, cause confusion, and should have been deleted.

Re Item VIII

Certain observations on the international application

1. The specification and claims are inconsistent and therefore confuse the true nature of the invention. It was considered that instead of raising objection under Item III (no opinion) because of this and the fact that the search may be incomplete in view of the change in scope of the claims, an attempt would be made to write a full report. It is clear now that the description, with its many references to backscatter and BAGI, give the impression that backscatter is actually measured, when this does not appear to be the case. In the embodiment of e.g. figs. 4,5, a reflector is provided to direct the radiation back to the detector, and at page 7, line 11, "reflected" is referred to rather than backscatter. As long as the sample is very transparent, there would be no actual scattering, but the "backscatter geometry" (use of a mirror) would permit absorption measurement, involving a double pass through the sample.

The description should have been fully revised to make clear exactly what mechanisms were involved.

2. Statements of invention (pages 4-5) should correspond in wording with the independent claims.

3. Clarity:

The scope of claim 1 is not clear in the following respects:

- the restrictive effect of the expression "used in combinatorial chemistry" is not clear.

As far as can be seen it merely indicates some possible application in this field.

- the scope of the term "zone" is not clear.

- the scope of the term "reactor" is not clear.

- the manner in which the detector is "adapted" is not clear.

Similar obscurities occur in other claims.

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CLAIMS

- 5 1. An apparatus used in combinatorial chemistry
 comprising:
- a. an array of zones each consisting of or
 comprising a reactor and being capable of containing
10 diverse material, each said zone also being capable of
 containing a reaction product of the reactor;
- b. an electromagnetic radiation source capable of
 generating radiation of a predetermined wavelength
15 which can be absorbed by a sought material in the
 reaction product of the reactor;
- c. a detector which is adapted to detect said
 electromagnetic radiation; and
20
- d. a reflective surface in said zone adapted to
 receive said electromagnetic radiation after passing
 through said reaction product in the zone and reflect
 said radiation through said reaction product to said
25 detector.
2. The apparatus of claim 1 in which the radiation
 source is a laser.
- 30 3. The apparatus of claim 2 in which the radiation
 source is infrared radiation.
4. The apparatus of claim 3 in which the reactors
 have means to supply differing fluids.

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5. The apparatus of claim 1 wherein the zone is adapted to receive fluid effluent from a reactor in the array.
- 5 6. A process for detecting a chemical reaction producing a sought chemical compound in an array of zones each consisting of or comprising a reactor and containing diverse materials comprising:
- 10 a. passing electromagnetic radiation into one or more of said zones said electromagnetic radiation having a wavelength absorbed by the sought chemical compound, said radiation passing through the reaction product of said reactor contained in the zone.
- 15 b. reflecting the electromagnetic radiation which has passed through the reaction product in the zone to pass once again through the reaction product, and
- 20 c. determining the intensity of the electromagnetic radiation reflected through the material in the zone to determine the presence of the sought chemical compound by the occurrence of absorption of the radiation having the wavelength absorbed by the sought
- 25 chemical compound.
7. The process of claim 6 wherein the electromagnetic radiation is infrared radiation.
- 30 8. The process of claim 7 wherein differing fluids are provided to reactors in the array.
9. The process of claim 7 wherein the electromagnetic radiation is generated by a laser.

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10. The process of claim 9 wherein the irradiation is rastered over a plurality of zones of reactors in the array.

5 11. The process of claim 10 wherein the reflected radiation is detected in a form that can generate a video image.

10 12. The process of claim 6 wherein the electromagnetic radiation is monochromatic and is such that only the sought chemical compound will absorb the radiation.

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09/857953
JC02 Rec'd PCT/PTC 12 JUN 2001

EXPRESS MAIL MAILING LABEL NO. EL652518145US

DATE OF DEPOSIT: June 12, 2001

**THIS APPLICATION IS THE ENTRY INTO THE
NATIONAL PHASE UNDER 35 U.S.C. 371**

Applicant(s): Louis D'Esposito

International Application No. PCT/US99/29508

International Filing Date: 14 December 1999

Priority Date Claimed: 14 December 1999

Title: APPARATUS AND METHODS FOR COMBINATORIAL CHEMICAL ANALYSIS

Attorney's Docket No.: 17932

REPLACED BY
ART 34 AMET

It is Claimed:

1. An apparatus comprising an array of a plurality of zones capable of containing diverse material, an electromagnetic radiation source capable of generating radiation of a predetermined wavelength and adapted to irradiate one or more zones, and a detector which is adapted to detect backscatter of said radiation of said wavelength from one or more zones being irradiated.
2. The apparatus of claim 1 in which the radiation source is a laser.
3. The apparatus of claim 2 in which the radiation is infrared radiation.
4. The apparatus of claim 1 in which a plurality of zones in the array are discrete reactors.
5. The apparatus of claim 4 in which the discrete reactors have means to supply differing fluids.
6. A process for detecting a chemical reaction producing a sought chemical compound in an array of reaction zones containing diverse materials comprising (a) irradiating one or more of said reaction zones with electromagnetic radiation having a wavelength absorbed by said sought chemical compared and (b) determining by backscatter the absorption of electromagnetic radiation of said wavelength from a reaction zone during irradiation.

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7. A process for detecting the presence of a chemical in an array of plurality zones containing diverse material comprising irradiating one or more of the plurality of zones with an electromagnetic radiation having a predetermined wavelength capable of being absorbed by the chemical sought to be detected and detecting by backscatter the absorption of the electromagnetic radiation in the one or more of the plurality of zones containing the material to determine the presence of the chemical sought to be detected.

8. The process of claim 7 wherein the electromagnetic radiation is infrared radiation.

9. The process of claim 8 wherein differing fluids are provided to different zones in the array.

10. The process of claim 9 wherein the electromagnetic radiation is radiation generated by a laser.

11. An apparatus comprising an array of a plurality of zones capable of containing diverse material, an electromagnetic radiation source capable of generating radiation of a predetermined wavelength and adapted to irradiate more than one of said zones by rastering over an area containing said zones, and a detector which is adapted to detect backscatter of said radiation of said wavelength from the area being irradiated.

12. The apparatus of claim 11 wherein the backscatter is detected in a form that can generate a video image.

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13. The apparatus of claim 11 wherein each of the zones comprise a reactor and a pipe whereby fluid from the reactor passes through the pipe, and the irradiation is directed into the pipe.

14. The apparatus of claim 13 wherein a reflector is provided at the end of the pipe to reflect radiation back into the pipe.

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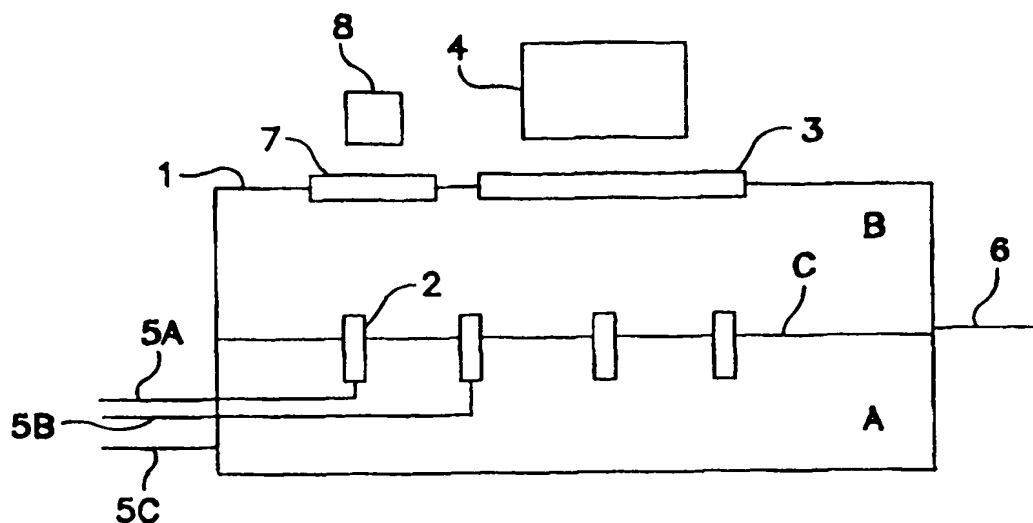
WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : G01N 21/25, 21/51		A1	(11) International Publication Number: WO 00/36399
			(43) International Publication Date: 22 June 2000 (22.06.00)
(21) International Application Number: PCT/US99/29508		(81) Designated States: AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GE, HU, ID, IL, IS, JP, KR, KZ, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TR, TT, UA, US, UZ, VN, ZA, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 14 December 1999 (14.12.99)			
(30) Priority Data: 60/112,360 15 December 1998 (15.12.98) US			
(71) Applicant (for all designated States except US): UNION CARBIDE CHEMICALS & PLASTICS TECHNOLOGY CORPORATION [US/US]; 39 Old Ridgebury Road, Danbury, CT 06817-0001 (US).		Published <i>With international search report.</i>	
(72) Inventor; and (75) Inventor/Applicant (for US only): D'ESPOSITO, Louis [US/US]; 30 Pope Way, South Charleston, WV 25309 (US).			
(74) Agent: WIGGINS, Karen, Johnson; Union Carbide Chemicals & Plastics Technology Corporation, 39 Old Ridgebury Road, Danbury, CT 06817-0001 (US).			

(54) Title: APPARATUS AND METHODS FOR COMBINATORIAL CHEMICAL ANALYSIS



(57) Abstract

The presence of a sought component in an array of zones containing diverse materials is determined by irradiating the zones with an electromagnetic radiation of a predetermined wavelength which is absorbed by the sought component and determining the absorption of the radiation through detection of backscatter of said radiation.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
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PCT/US 99/29508

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G01N21/25 G01N21/51

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 GOIN

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 555 627 A (MCRAE JR THOMAS G) 26 November 1985 (1985-11-26) cited in the application column 3, line 28 -column 4, line 23	1-3,6-8, 11,12
A	figures 1,2 —	10,14
Y	US 4 498 780 A (BANNO TAIICHI ET AL) 12 February 1985 (1985-02-12) column 2, line 65 -column 3, line 59 figure 1 —	1-3,6-8, 11,12
A	EP 0 640 826 A (BECTON DICKINSON CO) 1 March 1995 (1995-03-01) column 2, line 6 - line 33 column 7, line 53 -column 8, line 6 figure 3 —	1,2,4,6, 7,11
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☒ Further documents are listed in the continuation of box C.

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Date of the actual completion of the international search

31 March 2000

Date of mailing of the International search report

06/04/2000

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INTERNATIONAL SEARCH REPORT

In. Application No

PCT/US 99/29508

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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